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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,554	11/12/2003	Hiroyuki Shinbata	1232-5203	9161
27123 7590 02/20/2007 MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER WANG, CLAIRE X	
			ART UNIT	PAPER NUMBER
			2624	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/712,554

Applicant(s)

SHINBATA, HIROYUKI

Examiner

Claire Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities:

On page 2, line 2 of the specification the phrase "region 403" should be changed to "region 304."

Appropriate correction is required.

### ***Claim Objections***

2. Claims 2-4 and 8 are objected to because of the following informalities:

Line 1 of claims 2-4, the phrase "according claim 1" should be changed to "according to claim 1."

Lines 3 and 7 of claim 2, the phrase "irradiation region region" should be changed to "irradiation region."

Appropriate correction is required.

As to claim 8, it is objected to because it is written in an unclear manner.

Examiner suggests changing claim 8 to be "A computer readable medium, storing a computer program according to the method of claim 6."

***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs, which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 7 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 7 defines a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to

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be realized" – Guidelines Annex IV). That is, the scope of the presently claimed a computer program can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

In order to continue examination and further prosecution, Examiner will be reading the claim as "A program stored on a computer-readable medium for making a computer realize said image processing method according to claim 6."

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Shinbata (US 2002/00114504 A1).

As to claim 1, Shinbata teaches an image processing apparatus (image processing apparatus; 2100 Fig. 20) comprising: sorting means for executing sorting processing of sorting a train of pixel values within the same line of a radiation image and thus rearranging the train of pixel values within the same line from pixels having higher pixel values to pixels having lower pixel values (this is just generating a histogram; Histogram forming unit 2131a Fig. 24); analyzing means for calculating a characteristic value from a predetermined region of the image after the sorting processing (characteristic value calculation unit; 2131 Fig. 24); and gradation transforming means (gradation conversion processing unit; 2141 Fig. 20) for executing gradation transformation processing of the radiation image based on the characteristic value (Fig. 20 clearly shows that the gradation conversion is done after the step of characteristic valued calculation is completed).

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As to claim 5, it is the same as claim 1. The only difference between the two claims is that claim 5 teaches the image processing apparatus of claim 1 further comprises a two-dimensions X-ray sensor for transforming the radiation into a radiation image (Fig. 3 shows an image obtained using X-ray).

As to claim 6, it is the method claim of claim 1. Therefore it is analyzed in the same way as claim 1. Please see above for details.

As to claim 2, Shinbata teaches irradiation region recognizing means for extracting an irradiation region (irradiation area extraction; 2120 Fig. 20) from the radiation image, wherein said sorting means executes the sorting process of the radiation image within the extracted irradiation region (the characteristic value is obtained within the irradiation area; Fig. 22 and Fig. 23).

As to claim 3, Shinbata teaches wherein the predetermined region for the calculation by said analyzing means is set as a region separated at a predetermined distance from an end on the side of a low pixel value in the image having undergone the sorting processing (Fig. 19 shows the value Th3 is the lower density limit in a plain image, which is extracted from the histogram; Thus Th3 indicates the predetermined distance from an end on the side of a low pixel value in the histogram).

As to claim 7, it is the computer program of claim 6 (software program code; [0104], line 3).

As to claim 8, it is the computer readable medium of claim 6 (memory mediums for storing computer program [0106]).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinbata in view of Isobe et al. (US 5,995,108) (this point forward will be referred to as Isobe).

As to claim 4, Shinbata teaches the radiation image contains a hand (Fig. 12) and lungs (Fig. 22). However Shinbata does not teach wherein the radiation image contains one or more regions of a gas part and a spinal part in the image. Isobe teaches a 3D imaging system that calculates the density of each object to be imaged. Isobe's imaging system shows the bone surface image (214 Fig. 9) also shows air area density (233 Fig. 3). Thus Isobe's imaging system that can image both air and bone reads on the claimed imaging system that contains both gas part and spinal part of an image. Therefore, it is obvious to one ordinarily skilled in the art at the time of the



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invention to combine Shinbata's radiation imaging system with Isobe's imaging system in order to better represent bone in an X-ray imaging system.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schultz (US 5,588,071) teaches identifying an area of interest using histogram data arranged in predetermined sequence.

Karellas (US 6,031,892) teaches a system for quantitative radiographic imaging.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claire Wang whose telephone number is 571-270-1051. The examiner can normally be reached on Mid-day flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 571-272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Claire Wang  
02/05/2007



JOSEPH MANCUSO  
SUPERVISORY PATENT EXAMINER